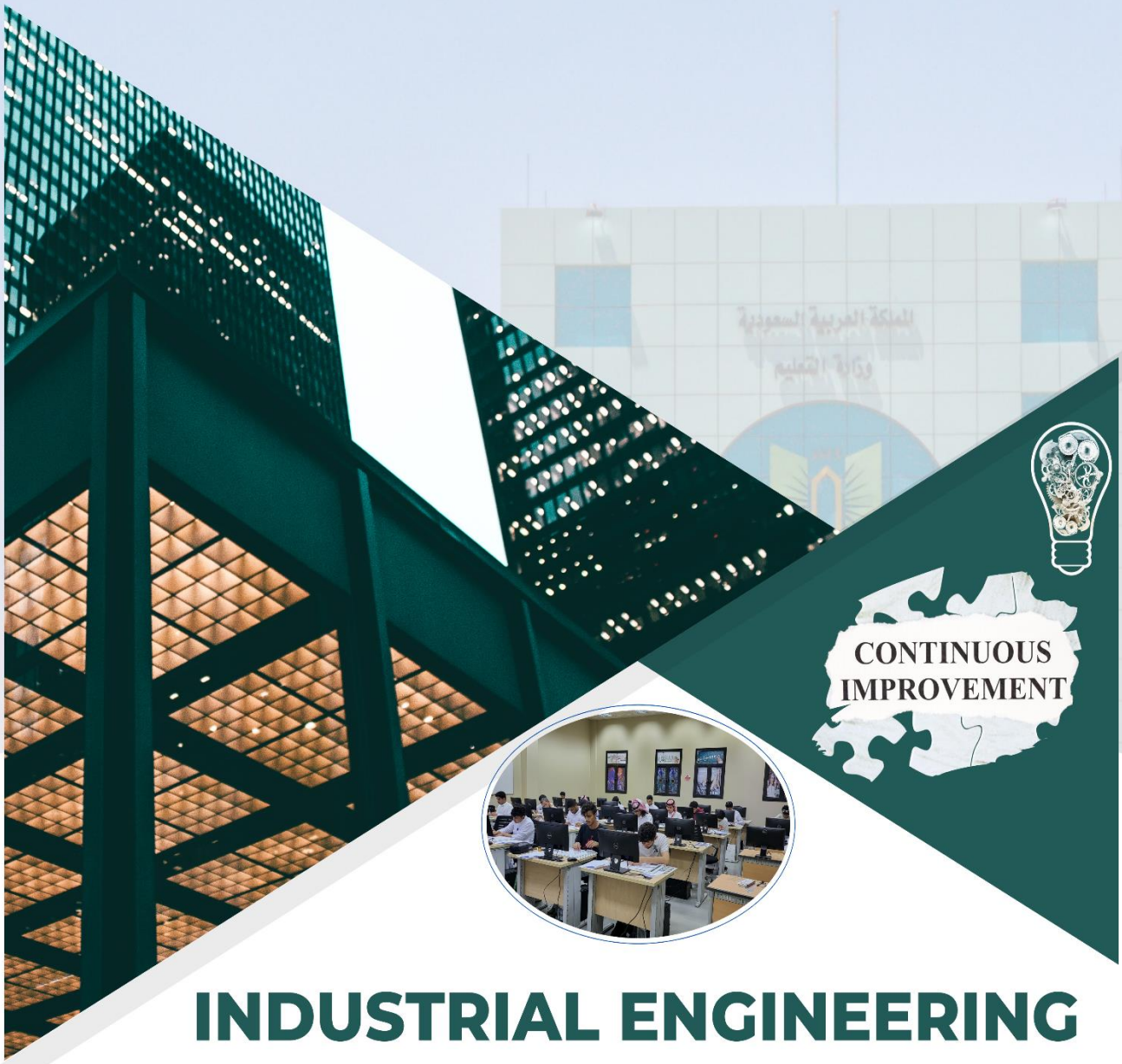
جامعة تبوك
University of Tabuk
كليـــة الهندسة
Faculty of Engineering

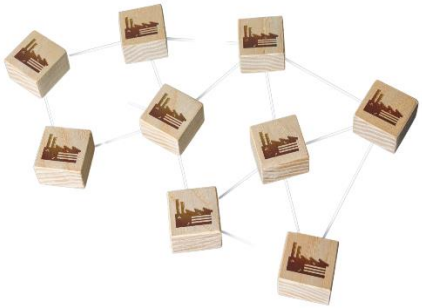


INDUSTRIAL ENGINEERING

QUALITY ASSURANCE MANUAL

FACULTY OF ENGINEERING, UNIVERSITY OF TABUK

Tabuk City , Saudi Arabia



Message from Chairman

The Department of Industrial Engineering (IE) was established in 2010, and enrollment in the preparatory year started in the academic year 2011-2012. The study is of 5 years' duration, after which the student obtains a Bachelor of Science in Industrial Engineering upon successful satisfaction of program criteria and completion of university requirements. The program serves the goals of the Kingdom of Saudi Arabia's development plan for preparing graduates to fit in different occupations serving Saudi society. The courses are taught by competent faculty members with doctoral degrees in their specialty areas. Most of the graduates are employed in various public and private sectors. The program has a mission well aligned with the university and has been following international and national standards to improve the program quality. The program was awarded ABET accreditation in 2018 and reaccreditation in 2023.

The IE program offers state-of-the-art courses to satisfy the region's labor market and meet international benchmarks. The program is committed to ensuring the quality of its teaching and learning processes, administration, learning environment, support services, research, and community services. Stakeholders' involvement is ensured for the continuous quality improvement of the program. Policies and initiatives are implemented through various committees and sub-committees at the program. This manual developed by the quality committee is a primary tool to ensure that the university/college philosophy of quality is fully disseminated and implemented at the program level.

Terms and definition

Quality:

It satisfies the requirements of the customer who invested in the product or service, and it is about being fit for the purpose for which the product or service was purchased.

Academic quality:

Academic quality is a way of describing how well the learning opportunities available to students help them achieve their awards. It is also about making sure that appropriate and effective teaching, support, assessment, and learning opportunities are provided for them.

Academic standards:

Academic standards are a way of describing the level of achievement that a student must reach to gain an academic award (for example, a degree). It should be at a similar level across the Kingdom.

Quality assurance (QA):

Quality assurance refers to a range of review procedures designed to safeguard academic standards and promote learning opportunities of acceptable quality for students.

Quality system:

A quality system, also known as a Quality Assurance (QA) system or a Quality Management System (QMS), is a management system that helps to ensure the consistency of quality of the goods or services (education) that are supplied. Compliance with Quality System Standards is demonstrated by the completion of a successful quality system audit conducted by a certified organization recognized by the Government, which is, in our case, The National Commission for Academic Accreditation & Evaluation (NCAAA).

Policies:

A policy is a statement stated to guide decision-making based on the framework of the institution's objectives, goals, and management trends.

Procedures:

A procedure is a "documented process": a series of prescribed steps which are followed in a specific regular order to secure adherence to the guidelines set in the policy the procedure adheres to. It describes the process: "who" does "what" and "when" "under what criteria" in a specific sequence.

Activity/ Task:

These are work instructions that describe how to accomplish the process. An activity is an action representing a step in the procedure. A task is a detailed description of an activity.

Forms:

These are documentations used to create records, checklists, surveys; which constitute the basis of the process communications, audit materials, and process improvement initiatives.

Records:

These are the critical output documents of any procedure

Abbreviations

UT	University of Tabuk
ME	Industrial Engineering
NCAAA	National Commission for Academic Accreditation & Evaluation
KPI	Key Performance Indicator
PEO	Program Educational Objectives
PO	Program Outcomes
PLOs	Program Learning Outcomes
KSA	Kingdom of Saudi Arabia
NQF	National Qualification Framework KSA
TQM	Total Quality Management
APR	Annual Program Report

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1. Introduction

The Faculty of Engineering at the University of Tabuk (UT) is committed to continuous quality improvement on all fronts. Since its establishment, the Industrial Engineering Program has been adopting UT-established practices regarding total quality management (TQM).

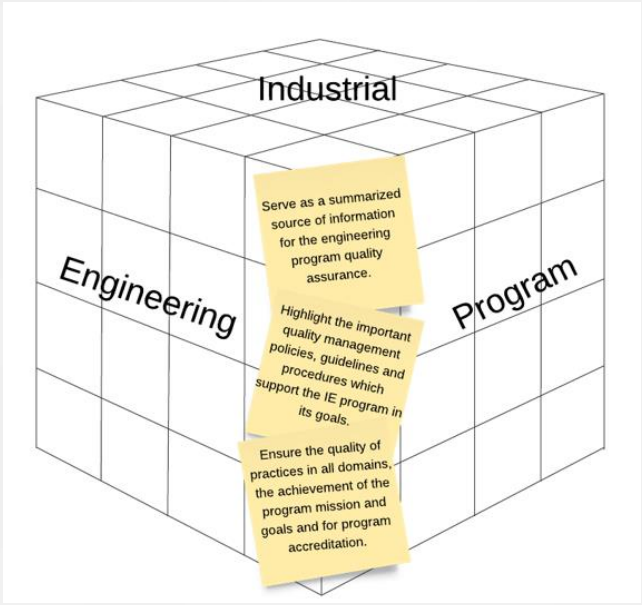


Figure 1: The purpose of the quality manual

Since the Industrial Engineering Program derives all its guidance including policies and procedures, quality practices and systems from the university, this manual has been drafted using the university's manual as a guide.

2. Vision, Mission, Program Educational Objectives (PEOs) and Program goals

Mission of The University of Tabuk

Figure 2 illustrates the vision and mission of the University of Tabuk, Faculty of Engineering, and the Department of Industrial Engineering.

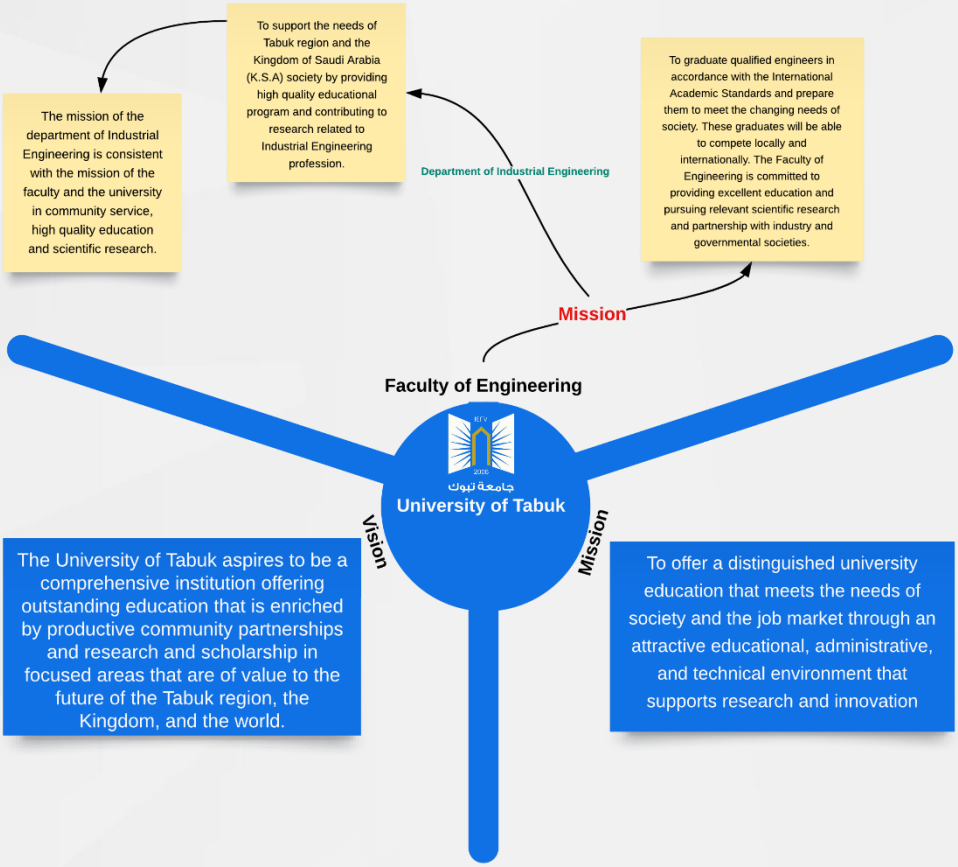


Figure 2: The vision and mission of the University of Tabuk, Faculty of Engineering, and the Department of Industrial Engineering

Program Educational Objectives (PEOs) and Program goals

Program Educational Objectives (PEOs) and Program goals are broad statements that describe what graduates are expected to attain within five years of graduation. The PEOs support the mission of the institution and are based on the needs of the program's constituencies. The IE program Educational Objectives (PEOs) describe what graduates are expected to attain within a few years of graduation. The department has established three broad program educational objectives (PEOs) for graduates as they progress through their careers as the following:

- PEO 1: Provide effective solutions that add value to engineering, business and industry processes.
- PEO 2: Engage in life-long learning and career development.
- PEO 3: Demonstrate professional, ethical and leadership qualities in engineering practice.

The department of industrial engineering goals are described in the figure 3 below:

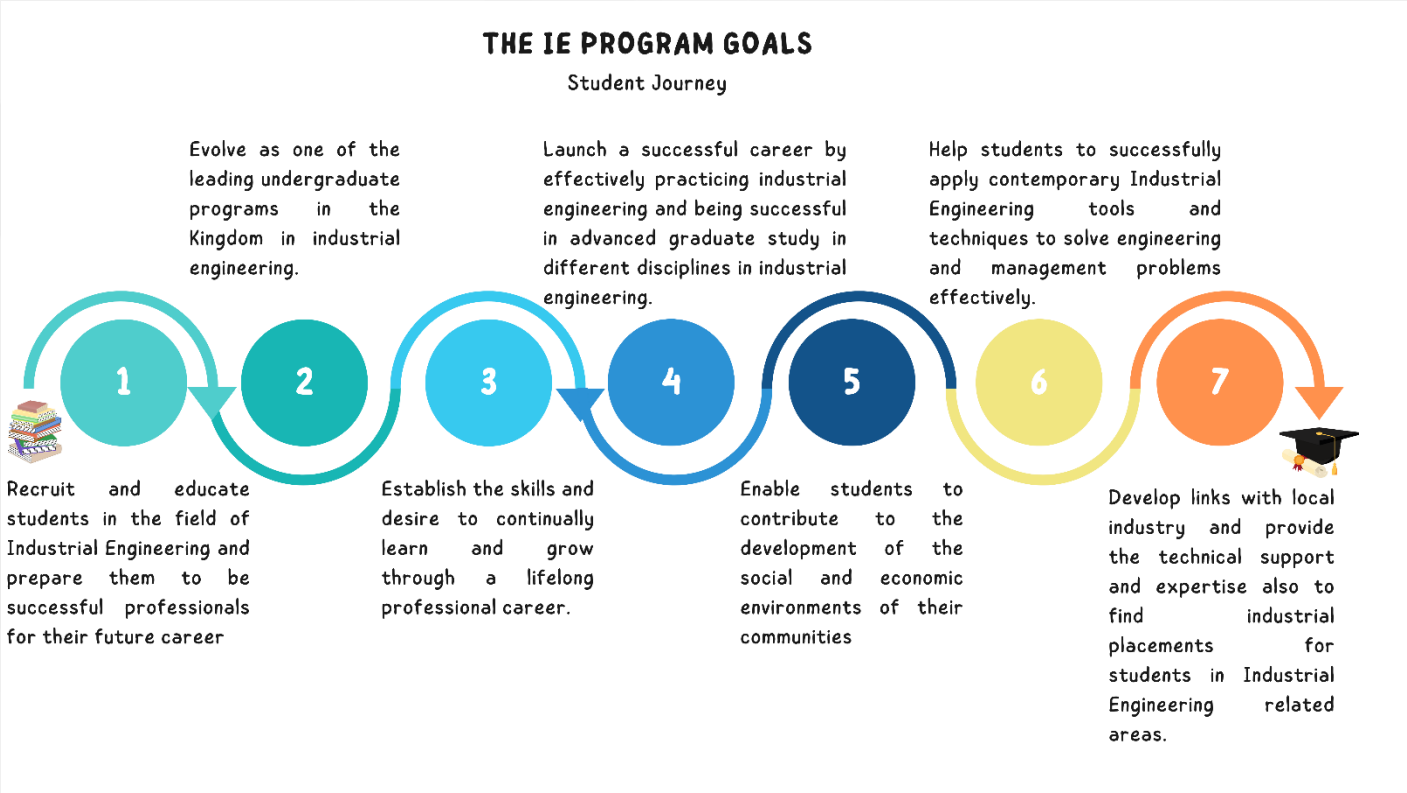


Figure 3: The IE Program Goals

The mission of the University of Tabuk (UT) emphasizes standard quality education, community service, and scientific research. Three Industrial Engineering Program PEOs support UT's mission. The achievement of the mission is assessed through direct and indirect measurements, its analysis, and benchmarking, which include analysis of Program Learning Outcomes (PLOs) and program Key Performance Indicators (KPIs).

3. Process to review the Program Mission and Goals

Developing the vision, mission, goals, and educational objectives for a Bachelor of Science in Industrial Engineering Program is an important process that requires careful consideration of various stakeholders' perspectives. Involving stakeholders such as advisory committees, employers, alumni, faculty, and students is essential to ensure the program aligns with industry needs and academic standards. Here's an elaborate process to guide the development of the vision, mission, goals, and educational objectives of the BSc IEP:

A. Formation of Planning Committee

- A planning committee comprising representatives from the program is formed, and the head of the committee is appointed. Alternatively, the Academic Accreditation Committee can also be assigned to complete this task.

B. Conduct a Stakeholder Analysis

- Identify and list all relevant stakeholders for the Industrial Engineering program.
- Understand their interests, expectations, and contributions to the program.
- Categorize stakeholders into internal (e.g., students, faculty) and external (e.g., employers, alumni, advisory committees).

C. Hold Stakeholder Meetings

- Conduct workshops or focus group sessions with each stakeholder group to gather their input.
- Discuss current industrial engineering trends, the required skill set, and the expectations from graduates.

D. Distribute Opinion Surveys

- Develop comprehensive opinion surveys tailored to each stakeholder group.
- Include questions related to the strengths and weaknesses of the existing program, suggestions for improvement, and the desired skills and competencies for graduates.
- Utilize online survey tools to reach a wider audience.

E. Analyze Survey Results

- Compile and analyze the survey data to identify common themes, priorities, and areas of consensus among stakeholders.
- Summarize the findings in a report for the planning committee.

F. Vision and Mission Formulation

- Based on stakeholder input, draft potential vision and mission statements for the Industrial Engineering program.
- Present these drafts to stakeholders for feedback and refinement.
- Ensure that the statements capture the essence of the program's purpose and aspirations.

G. Goal and Objective Setting

- Define overarching goals for the program, aligning them with the mission and vision.
- Break down each goal into specific, measurable, achievable, relevant, and time-bound (SMART) objectives.
- Ensure that the objectives reflect the identified needs and expectations of stakeholders.

H. Benchmarking and Alignment

- Benchmark vision, mission, goals, and objectives with similar programs and the requirements of the university, ministry, and accreditation organizations.
- Aligning the statements of the vision, mission, and goals with the university and faculty of engineering.

I. Advisory Committee Consultation

- Present the draft vision, mission, goals, and objectives to the advisory committee for review.
- Seek their feedback and suggestions for refinement.

J. Faculty and Student Input

- Engage faculty and students in the review process to incorporate their perspectives.
- Ensure that the proposed vision, mission, goals, and objectives align with students' academic and learning needs.

K. Final Approval and Communication

- Once the vision, mission, goals, and objectives are refined based on stakeholder input, seek final approval from relevant governing bodies.
- Communicate the finalized statements to all stakeholders, emphasizing transparency and inclusivity.

L. Periodic Review and Revision

- Establish a periodic review and revision mechanism of the vision, mission, goals, and objectives to adapt to changing industry trends and educational standards.
- Continue to engage stakeholders in the ongoing improvement process.
- Revise the vision, mission, and goals of the program in the following opportunities:
    - The program curriculum is revised.
    - The strategic plan of the university or faculty of engineering is changed.
    - There is a need to change the vision, mission, goals as per the instructions of the university or ministry.
    - There is a change in the eligibility requirements of accreditation organizations.
    - There is a strong opinion of the stakeholders in surveys.

By systematically involving stakeholders through surveys, workshops, and committee consultations, the development process ensures a comprehensive and well-informed foundation for the Bachelor of Science in Industrial Engineering program.

4. The organizational Structure

The organizational structure of Industrial Engineering Program is built in accordance with its vision, mission and goals and based on the efficiency of the human and financial resources in the program. For building the organizational structure, the program went through several stages, starting with defining the objectives and preparing detailed lists of activities by the program, its committees and units; and then defining the organizational relationships connecting them together at different levels vertically and horizontally, then defining the communication network that allows the exchange of information, then developing the organizational structure, and then preparing a guide that explains the competence, tasks and functional relationships, and finally monitoring the development process on a continuous basis.

Accordingly, the program organizational structure (Figure 4) shows the units and committees and the relationship between them, the lines of authority and the responsibility that link the parts of the program, and the dimensions of the scope of supervision.

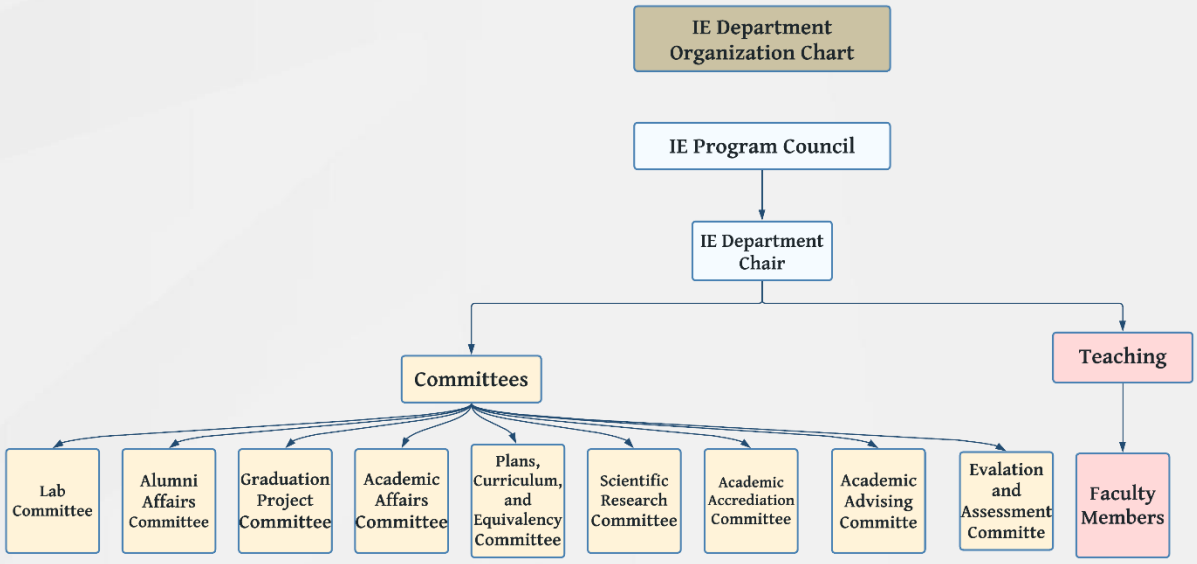


Figure 4: The organizational structure of the Industrial Engineering Program

5. The quality Philosophy

The process of quality improvement involves assessing current levels of performance and the environment in which the programs are operating, identifying strategic priorities for improvement, setting objectives, developing plans, implementing those plans, monitoring what happens and adjusting if necessary, and finally, assessing the results achieved. These steps involve a repeating cycle of planning and review. Major plans may involve a sequence of activities over several years, with several steps to be taken and the results of each step assessed at stages within that long-term plan. While the monitoring should be continuous, there are normally two time periods when more formal assessments take place; one is annual, with monitored performance and adjustments made as required, and the other is on a longer cycle in which major reviews are undertaken. UT published the first version of the procedural guide for programs and study plans in the academic year 2014/2015. The second updated version was published in 2019/2020 and the third updated version was released in 2021. The guide contains all procedures for the programs' establishment, accreditation, forms, and all other procedures. All programs in UT should be committed to UT policies, standards, and procedures that are published in the manual. (*UT Procedural guide for Programs and study plans link: https://drive.google.com/file/d/16Fu4sJC5Lia10-opraVcjxqtGzEqvP_0/view?usp=sharing*)

The Industrial Engineering Program relies on the continuous improvement methodology PDCA, which consists of four steps that hinged together to ensure its committed to the institutional policies, standards, and procedures in designing, developing, and modifying the curriculum , figure 5 below shows the methodology.

Figure 5: The faculty of engineering methodology

Plan:

The introduction of a new program in UT starts with plan to assess the needs for this program, followed by preparing a program specification document that specifies the main program

objectives, learning outcomes satisfying the NQF domains, teaching strategies, and assessment methods to measure the PLOs.

Do:

At this stage all course specifications are prepared according to the NCAAA standards and forms and updated accordingly. Appropriate learning outcomes for each course as well as teaching strategies and assessment methods and the distribution of the course topics are developed. Moreover, courses are prepared to achieve program goals and learning outcomes. Lasty in this step, the teaching and learning methodologies followed in each course are according to those stated in the course specification.

Check:

This is a crucial step in our methodology, before starting of the course meeting or departmental council meeting is held to review and discuss all issues related to the course and the results of previous improvement plans, then plan for course delivery, check facilities and resources and distribute the tasks and responsibilities. Throughout the course, the course coordinator continuously monitors all course activities, ensuring the plan for delivery of the course is followed and facilitates difficulties and overcome obstacles faced during its delivery, gathering evidences for completion of course binder and completing the course report. The course reports are prepared using NCAAA forms and provide an opportunity for the instructors to highlight issues they experienced or noted related to the effectiveness of the planned teaching strategies, and the extent to which the intended learning outcomes had been achieved.

ACT:

This step is to sustain and ensure that the program is achieving its mission and goals The IE program regularly evaluates the feedback from beneficiaries. The course and program reports are used annually to assess the quality of education and any obstacles facing the quality of this process. Proposed changes are presented, discussed, and approved according to the type and percentage of changes to the authorized level as stated in the UT procedural manual for programs and study plans. The levels for approval changes in UT courses and programs are summarized in Table (1). Any modification in the program plan must be documented and approved. The IE program strictly follows the university regulations in this concern.

Table 1 : Summarized of The levels for approval changes in UT courses and programs

Intended curriculum changes	Final Level of Approval
Program Level	
Changes including a program's mission, objectives, title, program length (total number of years/levels/ hours), program learning outcomes, program specifications, study plan, and adding co-requisites or prerequisites	UT Standing committee of programs and study plans
Changes in ordering of PLOs, program KPIs, course code	Department Council & Faculty Council
Change in the facilities, operational plan, dropping program co- requisites or pre-requisites	Faculty Council
Course Level	
Changes in the title, credit hours, length of period for teaching, timing in the program plan, update of course specification affecting >25% of CLOs, language of teaching	Standing committee of programs and study plans in UT
Changes in course policies and regulations	Faculty council
Course teaching strategies, <25% change in CLOs, textbooks, reference materials, updates in Engineering knowledge in related topics, distribution of topics/weeks, methods for assessment; measurement and evaluation grading systems.	Department Council

Course Planning, implementation, delivery, and reporting

The Course coordinator is a leader in the successful implementation of the Integrated curriculum. At the faculty of engineering at Tabuk University, the Course coordinator is responsible for ensuring effective management of the course, its conduction according to what is stated in the course specifications, and ensuring the use of teaching, learning, and assessment strategies and the methods designed in course specifications to achieve the course learning

outcomes and the aligned program learning outcomes. The course coordinator is also responsible for ensuring that the delivery and management of the course follow Faculty and University educational policies and regulations. The course coordinator is responsible for maintaining and updating all course data and information (course specification, timetable, exam copies, course report, etc.) to ensure that this information will help other parties in governing program planning, implementation, and evaluation.

Responsibility of Course Coordinators and Instructors

- Actively participate in all course activities in all its phases (planning, implementation, evaluation, and improvement).
- Ensure that the course is conducted as scheduled with adherence to the schedule and teaching plan.
- Communicate regularly with the students to monitor any deviation from the teaching schedule.
- Deal with questions and problems related to the course conduction and management.
- Ensure that all educational materials, resources, and facilities are ready when required for the students and teaching staff.
- Work with the relevant units/committees to create efficient systems to support the delivery of the course.
- Ensure that the course is being run in accordance with general faculty and university guidelines.
- Ensuring that all academic staff teaching the course are clearly and well informed by what is required from them through group and/or individual meetings as appropriate.
- Ensure that the students are oriented with the course learning outcomes, contents, teaching and learning strategies, assessment methods, required educational resources, student support, and counseling, and their roles in course evaluation and improvement.
- Clarifying the course requirements and the assessment methods for the students at the beginning of teaching every course
- Provide ongoing guidance to the teaching staff of the course and deal with any problems that arise.
- Provide ongoing guidance to the students and address any questions and problems.

- Monitor the progress of the course and provide feedback to teaching staff and the students if required.
- Monitoring the commitment of the teaching staff to implementing the teaching strategies and the approved assessment methods mentioned in the course specification.
- Clarifying the requirements of students' attendance in the course and monitoring the extent of their commitment
- Monitoring the attendance and counselling for their better performances
- Preparing and updating course documents and materials
- Update course specification based on previous course report, NCAAA templates and guidelines, and recommendations and feedback of accreditation committee.
- Put and follow up course timetable including all teaching and practical training activities besides teaching and simulation session.
- Updates student's study guide, exam blueprints and active teaching materials
- Implement and monitor course improvement plan.
- Assuring high quality student assessment.
- Setting up clear plan for post exam tasks as marking and correction of exam papers, item analysis, discussion of the students' results, approval of the student grades.
- Collecting the feedback on the course from a variety of sources, including students through electronic surveys, teaching staff, and other staff, to identify areas for improvement, both in terms of syllabus and materials design and administrative systems.
- Measurement of achievement of CLOs and verify the students' achievement levels, their grades distribution, and their program completion rate in coordination with accreditation committee.
- Collecting the data essential for preparation of course report.
- Analyzing the feedback and statistical data and report on the course

6. Program Quality Assurance and Review Cycle

Course Level

At the end of each course, the course coordinators submit the course files and course reports on the NCAAA forms. The minimum requirements for annual course evaluation should include

a summary and analysis of the final marks of students with comments on grade distribution, measurement of the achievement course learning outcomes (CLOs), the effectiveness of planned teaching and assessment strategies for CLOs, course evaluation by students and other evaluators, and an action plan for improvement that may include rising issues or proposals for change.

1. Course reports are prepared by the course coordinators on NCAAA forms, revised and approved accreditation committee.
2. Accreditation committee revises the submitted course reports and check their completion and prepares a collective report on the plan of improvement in the submitted reports.
3. The collective report and all course reports are approved by the program coordinator and raised to the faculty council.
4. The department council discusses and approves the course reports.
5. The deanship of development and quality sends the recommendation to the program coordinator for follow up.
6. The program coordinator sends the recommendations to the course instructor for execution, follow-up of implementation of the improvement plan, and the results are recorded in the course report of the next academic year.

Program Level

The quality management of the program is implemented through continuous improvement "as shown in figure 6 below" and monitored on a regular basis using an appropriate evaluation mechanism in order to support the continuous improvement of the program and its activities and ensure that it is achieving its mission, goals, and learning outcomes. Program level quality assurance is ensured through PLO analysis, cohort Analysis, Result analysis and KPI analysis at the end of every year.

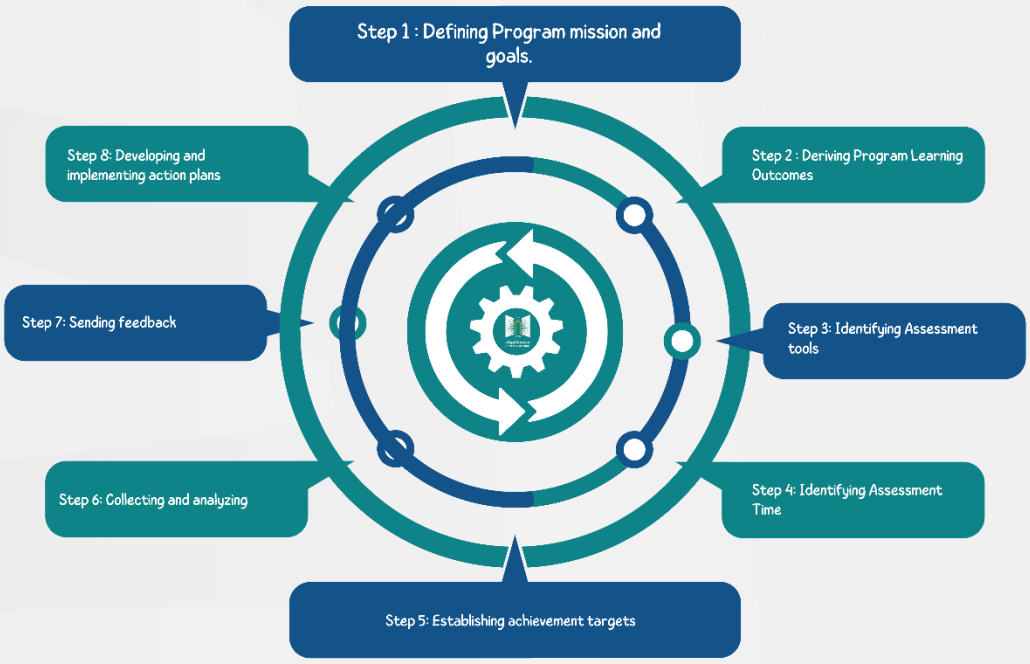


Figure 6: Steps of the Program Assessment Process.

1. The course coordinators submit the finalized approved course reports to the accreditation committee.
2. The accreditation committee writes the annual program report (APR). The APR summarizes the quality of the program performance and sets action plans for the improvement of the educational process and other processes.
3. The department council revises and approves the APR and submits it to the deanship of quality and development.
4. The deanship of quality and development revises the APR and ensures its fulfillment for the requirement of program accreditation.
5. The deanship of quality and development revises the completion of measurement of the PLOs and sends its recommendations to the program and follows their implementation.
6. The program coordinator sends the recommendations to the concerned entity.
7. The accreditation committee follow the execution of the improvement plans and the percentage of achievement of the improvement plans is reported in the APR of the next year.

Table 2: The Quality assurance Procedures at the course and Program level

Activity Name	End of Course	Annually	Responsibility
Course Evaluation Survey	√		Course coordinator
Course Report finalization	√		Course coordinator
Course Binder preparation	√		Course coordinator
Students' Evaluation of Quality of learning experience in the Program (Survey 2)		√	Accreditation Committee & Evaluation and Assessment Committee
Evaluation of Vision, Mission, Program Objectives (POs), Curriculum, and Program Learning Outcomes (Program Evaluation Survey -1)		√	Accreditation Committee & Evaluation and Assessment Committee
Satisfaction of beneficiaries with the learning resources (Survey 6)		√	Accreditation Committee & Evaluation and Assessment Committee
Employers' evaluation of the program graduates' proficiency (Survey 4)		√	Accreditation Committee & Evaluation and Assessment Committee
Alumni Evaluation Survey (Survey 1, 6)		√	Accreditation Committee, Evaluation and Assessment Committee, Alumni Affairs Committee
Academic Advising Survey (Survey 5, part 2)		√	Accreditation Committee & Evaluation and Assessment Committee
Operational Plan report		√	Accreditation Committee
Program KPI Report Preparation and Analysis		√	Accreditation Committee
Annual Program Report Preparation		√	Accreditation Committee
Annual Program Report Revision		√	Deanship of D&Q
APR and Course Reports		√	Department

approval			
Actions Plan Preparation and Distribution		√	Accreditation Committee
Actions Plan Execution Assessment		√	Department Council

Table 3: Time Frame of Program Evaluation

Activity Name	Monthly	Start of the Course	End of the Course / Semester	Annually	Mid-cycle (Every 3/4 years)	Every 5 years	Every 6 years
Units and committee meetings				√			
Departmental council meetings				√			
Faculty council Meeting				√			
Course Binders			√				
Course Evaluation Surveys			√				
Course Reports			√				
Teaching/training Plan and Schedules			√	√			
Surveys				√			
Program KPI Report and Analysis				√			
Operational plan Report and Analysis				√			
Stakeholders' surveys Report and Analysis				√			

PLOs measurement, analysis, report finalization				√			
APR & the Improvement Plan				√			
Course reports and APR Revision/Recommendations by Deanship of D&Q				√			
Improvement Plan Execution Assessment				√			
Advisory committee meetings (>2) and recommendations				√			
Program Self-assessment (SSR)							√
Review of Program & course Specifications and LOs and study plan					√ (Internal review) (Minor change)		√ (External Review) Major Change
Program mission, goals, and operational plan						√	
Program SWOT Analysis Preparation and Reporting						√	

Table 4: Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching and assessment methods	Program leaders, Students, Alumni, faculty, employers	Exam results and Course reports, Course evaluation survey PLOs achievement APR Meetings	End of each course Annually Mid of the program
Learning resources	Program leaders, Students, Alumni, faculty, employers	Course reports Surveys	End of each course Annually
Effectiveness of Leadership	Academic Staff Admin staff	Staff performance Evaluation forms.	Annually
Overall quality of the program	Students, Graduates, Alumni, Faculty, Program leaders, administrative staff, Employers, Advisory committee	Course reports APR Operational plan report KPIs reports Program goals report PLOs Stakeholders survey report Advisory committee meetings	Annually

7. Key Performance Indicators (KPIs) and Benchmark

KPIs are specific forms of evidence used by the faculty to provide evidence and measure the quality of performance. The KPIs are one of the most important tools for assessing the quality of academic programs according to the criteria and rules of the NCAAA and are among the most prominent practices that contribute to decision-making and follow-up processes and continuous development and improvement. The NCAAA has identified 17 KPIs at the program level all of which are in line with the evolving program accreditation standards. These indicators are the minimum to be periodically measured, and the academic program can use additional performance indicators if it believes they are necessary to ensure the quality of the program. One program KPI is added to the 17 KPIs of the NCAAA as it is believed to add valid information for assessing and evaluating the performance of the IE program.

1. Levels of Each KPI

It is expected that the program measures the KPIs with benchmarking using the appropriate tools, such as (Surveys, Statistical data, etc.) according to the nature and objective of each indicator, as well as determining the following levels for each indicator:

a) Actual performance

Refers to the finding outcome determined when the KPI is measured or calculated. It represents the actual reality of the present situation. A finding benchmark is also an internal benchmark.

b) Targeted performance level:

Refers to the anticipated performance level or desired outcome (goal or aim) for a KPI. A target benchmark is also an internal benchmark

c) Internal reference (Internal benchmark):

Refer to benchmarks that are based on information from inside the program or institution. Internal benchmarks include target or finding benchmark data results from previous years.

d) External reference (External benchmark)

Referring to benchmarks from similar programs that are outside the institution, it refers to other institutions (national or international).

e) New target performance level

Refers to the establishment of a new or desired performance level or goal for the KPI that is based on the outcome of the KPI analysis.

2. Selection of KPIs:

17 KPIs specified by NCAAA are considered for the program evaluations. A report is prepared annually describing and analyzing the results of each indicator (including performance changes and comparisons according to sites and gender) with precise and objective identification of strengths and aspects that need improvement. For each KPI, an acceptable target level to be achieved is set based on the program strategic goals, the comparative data of the internal and external benchmarking, with the intention to gain a performance growth at a rate of 5% annually.

For each KPI the following values are measured:

- **Target KPI:** which is determined according to the KPIs measurements of the internal and external benchmarking. Hence, it is the new target KPI of the former academic year.
- **Actual KPI:** which is the actual level of the current year performance.
- **New target KPI:** which is determined in consideration of the actual benchmark.

KPI Analysis:

Refers to a comparison and contrast of the benchmarks to determine strengths and recommendations for improvement.

- For the achieved target KPI level, a holding of the new targeted level is kept for an additional year to establish and maintain the good practice before setting an increment of the new target KPI.
- A 5% growth rate is considered acceptable improvement of the practice when setting a new target KPI level.
- If the target is not achieved so the previous target will be held as a new target for the year after, with investigating the reasons and delineating a plan for improvement to reach the targeted performance

3. Sources of data:

- The IE program operational plan reports.
- Reports on stakeholder surveys
- Program evaluation survey (Survey 1)
- Courses' evaluation surveys (Survey 3, Course evaluation survey)
- Student experience survey (Survey 2).
- Academic Staff Survey (Survey 1, 6)
- Employer Evaluation survey (Survey 1, 4).
- Stakeholder satisfaction with learning resources report (Survey 1, 6)
- Official students' records obtained for the university secured internal system (e-register).

- Students performance in competitive exams
- IE program staff university records from human resources.
- Scopus and ISI databases.

4. Data analysis methodology:

All data analysis is performed using Microsoft Excel for Microsoft 365. KPIs are presented as one of the following:

- Weighted mean and scored on a scale of 5 considering (3/5) as a cut-off level of satisfaction
- A proportion
- A percentage of performance.
- A number.

The outcome of all KPI values is presented as a percentage to calculate the final performance of the IE program indicators for the academic year of interest. Rates of growth (increment) or decline (decrement) are calculated in the comparative and trending analysis of the current performance with internal and external benchmarking.

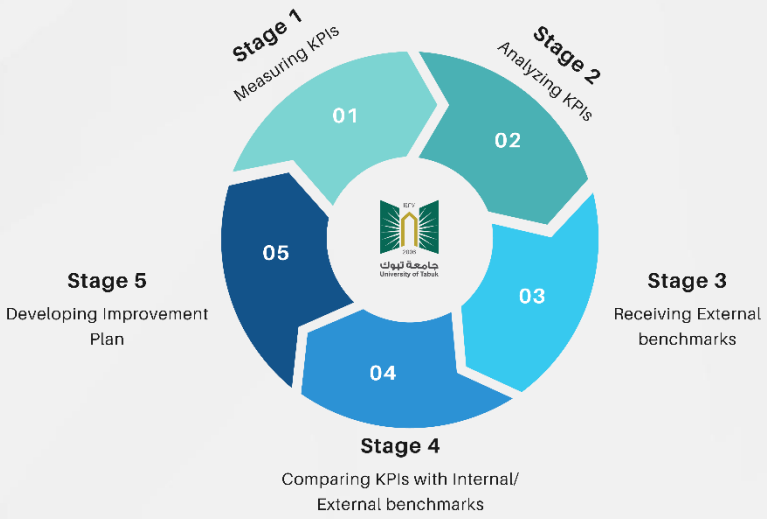


Figure 7: KPIs annual assessment cycle

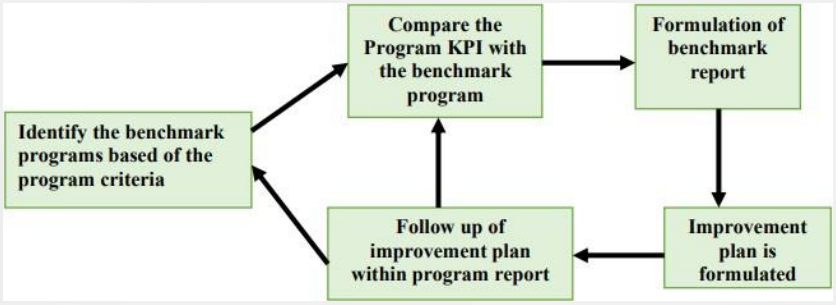
Table 5 : KPIs annual assessment cycle

Code	Indicator	Goal	Time for measurement	Measurement Responsibility	Measurement Tools
KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	Measuring the quality of program performance in all axes	Annually at the end of the academic year	Academic Accreditation Committee	Operational plan template Completion rate report template
KPI-P-02	Students' Evaluation of quality of learning experience in the program	Measuring the educational quality of the program	Annually at the end of the academic year	Plans, Curriculum and Equivalency Committee	Survey 2
KPI-P-03	Students' evaluation of the quality of the courses	Measuring the educational quality of the program	Annually at the end of the academic year	Plans, Curriculum and Equivalency Committee	Survey 3
KPI-P-04	Completion rate	Measuring the educational quality of the program	Annually at the end of the academic year	Evaluation and Assessment Committee	Statistical data and analysis
KPI-P-05	First-year students retention rate	Measuring the educational quality of the program	Annually at the end of academic year	Evaluation and Assessment Committee	Statistical data and analysis
KPI-P06	Students' performance in the professional and/or national examination	Measuring the educational quality of the program	Annually at the end of academic year	Evaluation and Assessment Committee	Statistical data and analysis of progress test results
KPI-P-07	Graduates' employability andenrolment in postgraduate programs	Measuring the quality of graduates ‹Characteristics, andthe extent of employers› satisfaction, and thelabor market's need for them	Annually at the end of academic year	Alumni Affairs Committee	Statistical data and analysis
KPI-P-08	Average numberof students in the class	Measuring the quality of educational facilities	Annually each academic yea	Evaluation and Assessment Committee	Statistical data and analysis
KPI-P-	Employers evaluation of	Measuring the quality	Annually each		Employer Survey 4

09	the program graduate proficiency	of graduates ‹Characteristics and employers›	academic year		
KPIP-10	Students' satisfaction with the offered services	Measuring the quality of support for students	Annually each academic year	Alumni Affairs Committee	Survey 5
KPI-P-11	Ratio of students to teaching staff	Measuring the quality of education elements	Annually at the end of academic year	Alumni Affairs Committee	Statistical data and analysis
KPI-P-12	Percentage of teaching staff distribution	Measuring the quality of education elements	Annually at the end of academic year	Plans, Curriculum and Equivalency Committee	Statistical data and analysis
KPI-P-13	Proportion of teaching staff leaving the program	Measuring faculty's satisfaction with the educational environment	Annually at the end of academic year	Evaluation and assessment committee	Statistical data and analysis
KPI-P-14	Percentage of publications of faculty members	Measuring the quality of the axis of scientific research	Annually at the end of academic year	Academic Affairs Committee	Statistical data and analysis
KPI-P-15	Rate of published research per faculty member	Measuring the quality of the axis of scientific research	Annually at the end of academic year	Scientific research committee	Statistical data and analysis
KPI-P-16	Citations rate in refereed journals per faculty member	Measuring the quality of the axis of scientific research	Annually at the end of academic year	Evaluation and Assessment Committee	Statistical data and analysis
KPI-P-17	Satisfaction of beneficiaries with the learning resources	Measuring the quality of learning resources	Annually at the end of academic year	Scientific Research Committee	Survey 6

8. Benchmarking and Improvement Cycle

It is a systemic and continuous process for measuring the program performance by comparing it to another program within or outside this university to identify the causes of the gap and work to address them and reach the best performance. Benchmarking is a vital process for maintaining the high quality of performance of any program and ensure continuous quality



improvement (Fig.4). It allows for comparing the performance of various aspects of the program with respect to the good practices recommended by the NCAAA.

Figure 8: KPIs Improvement Cycle

The Importance of Benchmarking:

1. Provide an opportunity to move internally and externally towards better models.
2. Providing cooperation opportunities between local organizations.
3. Adopting an organizational culture aimed at solving problems.
4. Assisting the foundation in precisely defining the gap between its performance and that of the leading institutions in its field of work.
5. It helps to provide the appropriate climate and enhances the desire for leadership of the institution and its employees to adopt a policy of change towards all that is better and new.
6. Helping define critical processes, give them the necessary attention and priority in implementation, and actively contribute to developing individual and group creativity.
7. It actively contributes to increasing the chances of achieving additional benefits for the program.
8. The external focus of the benchmarking method creates external competitive measures that necessarily increase the efficiency and effectiveness of internal performance quality

measures and makes them more competitive.

9. Stakeholders Surveys

The relationship between stakeholder's satisfaction and program sustainable growth and success is investigated focusing on the importance of relationships with critical stakeholders that may lead to better performance, as program while integrating business and societal considerations create value for their stakeholders. However, it is of most importance that top management actively leads this approach and that the governance bodies of the organizations support and check that this really happens. There are different types of surveys for all program stakeholders.

Main Principles

There are several general principles that should be followed if student surveys are to be as useful as possible.

1. It must be made clear to students that all survey responses are anonymous.
2. Surveys should include common questions to enable them to be used for comparisons within departments and between courses.
3. Some open-ended questions should be included to permit respondents to comment on additional matters of concern.
4. In addition to several individual items relating to matters considered important, surveys can include one or two summary items that can be used as general quality indicators.
5. To be used for benchmarking quality between programs the surveys should be distributed in similar ways and at similar times and comparisons should be made between comparable institutions.
6. Questions should be consistent over time (normally at least three years) so that valid trend data can be obtained.
7. The validity of responses depends on having a reasonable response rate. To encourage participation:
   a) Surveys should not be overused.
   b) Use should be made of the responses, and summary reports and indications of

action taken in response made available.

c) The surveys should not be too long (a maximum of 20 to 30 items plus a small number of open- ended items is usual).

Recommended Surveys

Students and staff are the principal customers of the education system and surveys of their opinions are one of the most important sources of evidence about quality in higher education. Other stakeholders should be considered, they can provide very good insight about the outcomes of the program. They can provide very useful suggestions for improvement that should be considered in the quality cycle for improvement as applied to individual courses, programs, and institutional planning.

Table 6 :Stakeholders' Survey Plan

Survey#	Survey Title	Mode of Survey	Linked ETEC KPI	Survey Takers	Desired Sample Size	Assessment Cycle
1	Evaluation of Vision, Mission, Program Objectives (POs), Curriculum, and Program Learning Outcomes	Online	Nil	Faculty, Alumni, Employer, Advisory Board, Students	25-100	Annual
2	Students' Evaluation of Quality of learning experience in the Program	Online	KPI-P-02	Final Year Students	25-50	Annual
3	Students' evaluation of the quality of the courses	Online	KPI-P-03	Students from First Year to Final Year	25-50	Annual
4	Employers' evaluation of the program graduates' proficiency	Online	KPI-P-09	Employers	15-25	Annual
5	Students' satisfaction with the offered services	Online	KPI-P-10	Students from First Year to Final Year	50-100	Annual

6	Satisfaction of beneficiaries with the learning resources	Online	KPI-P-17	Students, Faculty, Alumni, Advisory Board	25-50	Annual

Approval Data

	Prepared by	Approved by
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